

TYURIN, S.T.; BAZANOVA, A.I.; IL'CHENKO, B.N.

Results of the study of the sanitary, hygienic and physico-mechanical characteristics of Soviet plastics intended for use in the wine making industry. Trudy VNIIViV "Magarach" 13:149-163 '64.

(MIRA 17:12)

GRAFOV, L.Ye., *gornyy inzh.*; GORBUSHIN, V.I., V.I.; ZARANKIN, N.Ye.;  
DUDNIK, G.N.; BARONSKIY, I.V.; KOSTYUKOVSKIY, V.Ya. [deceased];  
LINDENAU, N.I.; BIRYUKOV, R.A.; LISKOVETS, A.R.; MURAV'YEV,  
V.P.; FESUN, V.A.; HERDYUGIN, V.A.; BEREZNYAK, M.M.; VASIL'YEV,  
Ye.I.; KOLLODIY, K.K.; IL'CHENKO, D.F.; YALEVSKIY, D.B.;  
GERASIMOV, V.P.; IVANOV, V.V.; GAVRILOV, G.V.; SUROVA, V.A., red.  
izd-va; OSVAL'D, E.Ya., red. izd-va; PROZOROVSKAYA, V.L., *tekhn.*  
red.

[Development and improvement in the technology of coal production]  
Razvitie i sovershenstvovanie tekhniki dobychi uгля. Moskva, Gos-  
gortekhnizdat, 1962. 359 p. (MIRA 16:2)  
(Kuznets Basin—Coal mines and mining)

VERGELESOV, V.M.; BELOUSOV, A.P.; PAL'K, Ye.Yu.; IL'CHENKO, E.A.;  
GERASIMOVA, Zh.I.

Polymeric transformations in some natural fats with complex  
composition. Izv. vys. ucheb. zav.; pishch. tekhn. no.6:48-54  
'63. (MIRA 17:3)

1. Ukrainskiy nauchno-issledovatel'skiy institut myaso-  
molochnoy promyshlennosti i Vsesoyuznyy nauchno-issledovatel'-  
skiy institut shirov.

SKORODUMOV, V.A.; IL'CHENKO, E.N.; ZHURAVLEV, S.V.

Syntheses in the phenothiazine series. Part 3: Amines of the  
phenothiazine series. Part 1. Zhur.ob.khim. 30 no.5:1680-1683  
'60. (MIRA 13:5)

1. Institut farmakologii i khimioterapii Akademii meditsinskikh  
nauk SSSR.

(Phenothiazine) (Amines)

SKORODUMOV, V.A.; IL'CHENKO, M.N.; ZHURAVLEV, S.V.

Syntheses in the phenothiazine series. Part 5: ~~syntheses of the phenothiazine~~  
series. (II). Zhur. ob. khim. 30 no.9:3095-310C 8 '60. (MIRA 13:9)  
(Phenothiazine)

IL'CHENKO, F.M.

Reconditioning the body of a cutting torch. Sbor.rats.predl.vnedr.v  
proizv. no.1:56 '61. (MIRA 14:7)

1. Krivorozhskiy metallurgicheskiy zavod.  
(Gas welding and cutting--Equipment and supplies)

IL'CHENKO, G. I.

IL'CHENKO, G. I. --"Investigation of the Anodic Behavior of Magnesium and Its Alloys under Protective Shielding Conditions." Acad Sci USSR, Inst of Physical Chemistry, Moscow, 1955 (Dissertation For the Degree of Candidate in Chemical Sciences)

SO: Knizhnaya letopis' No. 37. 10 September 1955

L 01803-67 FWT(m)/EWP(j)/T IJP(c) YN/RM

ACC NR: AP6030605 (AN) SOURCE CODE: UR/0413/66/000/016/0093/0093

408

INVENTOR: Yeliseyeva, V. I.; Avetisyan, I. S.; Drezel's, S. S.; Zubov, P. I.;  
Popov, V. A.; Makarov, Yu. A.; Izmaylova, I. S.; Orlova, K. G.; Gerasimova,  
A. S.; Gordonov, M. D.; Il'chenko, G. I.; Shreyner, S. A.

ORG: none

TITLE: Method of obtaining alkyl acrylate copolymers. Class 39, No. 185057

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 16, 1966,  
93

TOPIC TAGS: copolymer, copolymerization, monomer, alkyl acrylate

ABSTRACT: An Author Certificate has been issued for a method of obtaining  
alkyl acrylate copolymers with a vinyl acetate by emulsion copolymerization of the  
proper monomers in the water phase in the presence of an anion emulsifier. To  
obtain stable dispersions, 1-5 mol % unsaturated carboxylic acid, such as metha-  
crylic acid, is introduced into the initial monomer mixture. [Translation] [NT]

SUB CODE: 07/ SUBM DATE: 16Jan65/

Card 1/1

UDC: 678.744.32-139

IL'CHENKO, G.V.

Polymerization column for the production of block polystyrene.  
Bul.tekh.-ekon.inform.Gos.nauch.-issl.inst.nauch.i tekhn.inform.  
no.9:24-25 '63. (MIRA 16:10)

USSR/Cultivated Plants - Technical, Oleaginous, Sachariferous.

11-7

Abs Jour : Ref Zhur - Biol., No 9, 1956, 39455

Author : Ponomarenko, A.I., Il'chenko, G.Yu.

Inst : -

Title : Best Planting Development in Regions With Large Irrigation  
Systems of the Southern USSR.

Orig Pub : Salskaya svezka, 1957, No 6, 20-22.

Abstract : No abstract.

Card 1/1

- 132 -

IL'CHENKO, I.K.

New upsurge in the development of Ukrainian agriculture.  
Zemledelie 6 no.11:8-12 N '58. (MIRA 11:11)

1. Zamestitel' ministra sel'skogo khozyaystva USSR.  
(Ukraine--Agriculture)

IL'CHENKO, I.K., red.; CHERNOV, M.P., red.

[Each farm should grow high quality seed] Vyroshchuvaty  
sortove nasinnia v kozhnomu hospodarstvi. Kyiv, Derzh-  
sil'hospvydav URSS, 1963. 151 p. (MIRA 17:4)

ILICHENKO, K. (Leningrad)

Making test prints from miniature-camera negatives. Sov.foto 19  
no.3:57 Mr '59. (MIRA 12:4)  
(Photography—Printing processes)

BABCHINTSER, M.I.; IL'CHENKO, L.I.

Branch specifications for electronic medical devices. Trudy  
VNIIMIO no.3:195-208 '63 (MIRA 18:2)

SEDOV, V.L.; SOLOMATINA, L.V.; IL'CHENKO, L.M.

Thermal conductivity of natural magnetite crystals at low temperatures.  
Zhur. eksp. i teor. fiz. 43 no.3:1125-1126 '62. (MIRA 15/10)

1. Moskovskiy gosudarstvennyy universitet.  
(Magnetite crystals—Thermal properties)

GAVRILENKO, V.I.; IL'CHENKO, L.N.

Technological processes connected with the miniaturisation  
and microminiaturisation of electronic units (survey of  
foreign engineering). Priboroostroenie no.2:28-31 F '64.  
(MIRA 17:3)

Il'chenko, L. S.

USSR/Radiophysics - Radiation of Radio Waves. Antennas, I-5

Abst Journal: Referat Zhur - Fizika, No 12, 1956, 35287

Author: Vashkovskiy, A. V., Gulyayev, G. G., Il'chenko, L. S.

Institution: None

Title: Single-Wire Feeder

Original

Periodical: Sb. statey nauch. stud. o-va Mosk. energ. in-t., 1955, No 8, 141-150

Abstract: None

Card 1/1

IL'CHENKO, L.I.

DIDENKO, V.Ye.; TSAREV, M.N.; DMITRIYEV, M.M.; LEYTES, V.A.; OBUKHOVSKIY, Ya.M.; IVANOV, Ye.B.; CHERTOK, V.T.; URSALENKO, R.N.; KRIGER, I.Ya.; PINCHUK, A.K.; ANTONENKO, N.Z.; SMUL'SON, A.S.; VASIL'CHENKO, S.I.; DRASHKO, A.M.; RAYNYSKIY, B.N.; KUCHIRYAVENKO, D.N.; SAVCHUK, A.I.; ZHURAVLEVA, L.I.; BAUTIN, I.G.; KHRIYENKO, V.Ya.; MOSENKO, N.K.; CHEBONENKO, G.P.; LISSOV, L.K.; MAMONTOV, V.V.; BELUKHA, A.A.; POYDUN, V.F.; VOLODARSKIY, M.B.; KAL'CHENKO, G.D.; LEVCHENKO, V.M.; BASHKIROV, A.A.; VOROB'YEV, M.F.; IL'CHENKO, L.I.; PODSHIVALOV, P.S.; MOGIL'NIY, P.P.; LEVI, A.R.; VASLYAYEV, G.P.; DUNEV, V.V.; OSTPA, S.S.; SAMOFALOV, G.N.; POMIN, A.P.; LESHCHINA, A.I.; FANKEL'BERG, G.Ye.; KHODANKOV, A.T.; MAKARENKO, I.S.; KARPOVA, K.K.; VASILENKO, I.M.; VOLOSHCHUK, A.S.; SHNIKOV, A.K.; FILIPPOV, B.S.; TYUTYUNNIKOV, G.N.; DOLINSKIY, M.Yu.; NIKITINA, P.P.; MEDVEDEV, S.N.; TSOGLIN, M.E.; LERNER, R.Z.; BOGACHEV, V.I.

Mikhail Iakovlevich Moroz; obituary. Koks i khim.no.3:64 '56.(MLRA 9:8)  
(Moroz, Mikhail Iakovlevich, 1902?-1956)

hGin2

8/056/62/043/003/063/063  
B104/B102

AUTHORS:

Sedov, V. L., Solomatina, L. V., Il'chenko, L. N.

TITLE:

The heat conductivity of a natural magnetite crystal at low temperatures

PERIODICAL:

Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 43,  
no. 3(9), 1962, 1125-1126

TEXT: The heat conductivity of a natural magnetite single crystal (from the Ural) below 15°K was measured using a method worked out by N. V. Zavaritskiy and A. G. Zel'dovich (ZhTF, 26, 2032, 1956). Magnetic fields of up to 10 koe were applied in various directions. In all measurements the temperature gradient lay along the [111] direction of the octahedral crystal. The results (Fig. 1) clearly show the action of the spin waves in heat transfer. Above 3°K, heat conductivity is a linear function of temperature, below 3°K it is not. This deviation from linearity is related to the activation energy of the spin waves. At temperatures around 90°K, magnetic fields of up to 10 koe have no effect on heat conductivity within the accuracy of measurement which is 2 %. There are 2 figures.

Ca

Card 1/2

STOYANOVSKAYA, V. I., IL'CHENKO, L. V., BUDAGOV, S. M.

Karakul Sheep

Using sperm mixture for insemination of karakul sheep. Kar. i zver., 5, No. 1, 1952.

Monthly List of Russian Accessions, Library of Congress, June 1952. Uncl,ssified.

POLOVODOVA, V.P.; IL'CHENKO, L.Ya.

2d conference of entomologists of the sanitary epidemiological  
stations in the southeast of the European part of the R.S.F.S.R.  
on the control of injurious insects. Med. paraz. i paras. bol.  
33 no.6:754-755 N-D '64. (MIRA 18:6)

FEDORENKO, G.G.; IL'CHENKO, M.A.

Characteristics of growth and development of strain 1321 of  
Actinomyces antocyanus under the conditions of the submerged  
cultivation of antibiotic. Trudy Inst. mikrobiol. i virus.  
AN Kazakh. SSR 5:14-21 '61. (MIRA 15:4)  
(Actinomyces)

FEDORENKO, G.G.; SARTEAYEVA, U.A.; IL'CHENKO, M.A.

Formation of the antibiotic 1321 in different culture media. Trudy  
Inst.mikrobiol.i virus.Ak.Kashah.SSR 6:69-73 '62. (MIRA 15:8)  
(ANTIBIOTICS) (BACTERIOLOGY--CULTURES AND CULTURE MEDIA)

SARTBAYEVA, U.A.; FEDORENKO, G.G.; IL'CHENKO, M.A.

Dynamics of the accumulation of the antibiotic substance produced  
by the strain 1321. Trudy Inst.mikrobiol.i virus.AN Kazkah.SSR  
6:74-77 '62. (MIRA 15:8)

(ANTIBIOTICS) (ACTINOMYCES)

IL'CHENKO, M.F.

Cactus culture in hothouses of the Botanical Garden of Kiev  
University. Mauk zap. Kyiv. un. 16 no.1:93-103 '57. (MIRA 11:6)  
(Kiev--Cactus)

USSR/Cultivated Plants - Fruits. Berries.

M

Abs. Jour : Ref Zhur Biol., No 12, 1958, 53809

Author : Odarich, T.P., Il'chenko, M.F.

Inst : Kiev University

Title : An Experiment with Cuttings of the Common Pear

Orig Pub : Nauk. zap. Kiivs'k un-t, 1957, 16, No 1, 105-109

Abstract : The experiment with the pear cuttings was conducted in the hot beds and in the greenhouses of the V.V. Fomin Botanical Garden (Kiev). The pre-planting treatment of the lower ends of the green cuttings with 0.015% and 0.020% water solutions of  $\beta$ -indolylacetic acid for 24 hours resulted in 36% of the cuttings taking root. With the additional spraying of the planted cuttings with the same solution, 52% of the cuttings took root. With the treatment of the cuttings with 0.010% solution

Card 1/2

ODARICH, T.P. [Odarych, T.P.]; IL'CHENKO, M.F.

Propagation of plane trees under the climatic conditions for  
Kiev. Visnyk Kyiv.un. no.5. Ser.biol. no.2:10-20 '62.

(MIRA 16:5)

(KIEV---PLANE TREE) (PLANT PROPAGATION)

PCMAZANENKO, G.Ya.; IL'CHENKO, M.M.

Mastering and increasing the productive capacity of blooming  
mills. Stal' 25 no.8:720-722 Ag '65. (MIRA 18:8)

1. Cherepovetskiy metallurgicheskiy zavod.

IL'CHENKO, N. S.

"Increasing the effectiveness of tests of the principal insulation of high-voltage rotary machines." Min Higher Education USSR. Moscow Order of Lenin Power Engineering Inst imeni V. M. Molotov. Moscow, 1956. (Dissertation for the Degree of Candidate in Technical Sciences).

SO: Knizhnaya letopis', No. 16, 1956

SOV/144-58-10-14/17

AUTHORS: Nekrasov, M.M., Candidate of Technical Sciences, Docent  
and Butko, S.I., Senior Lecturer and Il'chenko, N.S.,  
Candidate of Technical Sciences, Lecturer

TITLE: The Use of Modified Varnishes to Increase the Moisture  
Resistance of the Insulation of Electric Motors  
(Primeneniye modifitsirovannykh lakov dlya povysheniya  
vlagostoykosti izolyatsii elektrodvigately)

PERIODICAL: Izvestiya Vysshikh Uchebnykh Zavedeniy, Elektromekhanika,  
1958, Nr 10, pp 146-150 (USSR)

ABSTRACT: Mining type motors and in particular motors in hand drills  
type AER-19, although exposed to severe operating  
conditions, are at present insulated with fibrous organic  
insulation of class A impregnated with bitumen-oil  
varnish Nr 460. The resistance to moisture is not very  
good. These drills may be made more reliable by  
improving the varnish impregnation of the winding. We  
used modified varnish type SK-3 (varnish 302 modified  
with silicone liquid Nr 2) as being more stable and heat  
resistant than varnish Nr 460. Comparative moisture  
resistance tests were made on the insulation of stator

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SOV/144-58-10-14/17

The Use of Modified Varnishes to Increase the Moisture Resistance of the Insulation of Electric Motors

windings of motors impregnated with modified varnish SK-3 and bitumen-oil varnish Nr 460. The stators treated with varnish SK-3 were dipped and stoved and those treated with varnish Nr 460 were twice vacuum impregnated by the normal works procedure. The electrical characteristics of the stator winding insulation after impregnation and drying are given in Table 1. The stator windings were immersed in water at room temperature and maintained in water for various times. Moisture resistance of the windings was judged by insulation resistance measurements; measurements were also made of insulation power factor and capacitance. Data about the changes of insulation resistance of the impregnated windings are given in Fig 1 and Table 2 from which it will be seen that the insulation resistance of the windings impregnated with varnish SK-3 is 35 to 50 times greater than that of windings impregnated with varnish Nr 460, after being in water for 20 to 24 hours. The windings impregnated with varnish SK-3 take a much longer time to reach their minimum insulation resistance

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SOV/144-58-10-14/17

The Use of Modified Varnishes to Increase the Moisture Resistance  
of the Insulation of Electric Motors

when immersed in water than do windings impregnated with varnish Nr 460. The poor resistance of varnish Nr 460 to moisture is a common cause of failure of drill motors operating in shafts where the air is wet and the motors are exposed to moisture. The marked deterioration in properties observed in windings impregnated with varnish SK-3 after being in water for 24 hours indicates that the procedure of impregnating finished stators without first impregnating the main and between-phase insulation is not adequate. This indicates that the insulation should be impregnated so far as possible before assembly in the machine. Then the complete machine should be impregnated again. It is concluded that much improved resistance to water of organic fibrous insulation can be achieved by impregnation with modified varnish

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SOV/144-58-10-14/17

The Use of Modified Varnishes to Increase the Moisture Resistance  
of the Insulation of Electric Motors

type SK-3. There is 1 figure, 2 tables and 2 Soviet  
references.

ASSOCIATION: Kafedra Dielektrikov i Poluprovodnikov Kiyevskogo  
Politekhnicheskogo Instituta (Chair of Dielectrics  
and Semiconductors, Kiyev Polytechnical Institute)

SUBMITTED: 29th September 1958

Card 4/4

SOV/144-58-11-14/17

AUTHOR: Il'chenko, N. S. (Candidate Technical Sciences, Dotsent)

TITLE: The Insulation of Long-Life Mining Type Electric Motors  
(Konstruktsii izolyatsii shakhtnykh elektrodvigatelye s  
povyshennym srokom sluzhby)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Elektromekhanika,  
1958, Nr 11, pp 117-125 (USSR)

ABSTRACT: This is an article about the insulation of motors for mining type hand drills. The mechanical properties of silicone insulation render it unsuitable for use in hand drill electric motors. The electric motors of hand drills are insulated with class A organic insulation which is relatively shortlived because it is exposed to wet air and water, high temperatures and contamination. Improved methods of insulating hand drill motors are required. Use was made of modified varnish type SK-3 (varnish Nr 302 modified with silicone fluid Nr 2). The following variants were tried: insulation consisting entirely of glass cloth and varnish SK-3, the stator winding being impregnated with varnish SK-3; combined insulation of glass cloth with varnish SK-3 and cable paper K-12 impregnated with

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The Insulation of Long-Life Mining Type Electric Motors

varnish SK-3, the stator winding being impregnated with varnish SK-3; insulation consisting entirely of glass cloth with bituminous varnish, the stator winding being impregnated with varnish 460; combined insulation consisting of unimpregnated glass cloth, pressboard and cable paper, the stator windings being impregnated with varnish SK-3; organic insulation as used at present, the stator windings being insulated with (a) varnish 460 and (b) varnish SK-3. In order to verify the service lives of these types of insulation fifteen hand drill motors were built, details of the insulation used being given in Table 1. In order to establish an insulation life test procedure, preliminary tests were made to determine the stator current when drilling soft ground (coal) and hard ground (when the drill is used by one or by two miners). Drilling hard rock, one man could cause the stator to carry 50% overload current, and when drilling hard ground two men could cause the stator current to be two or three times the rated value. Because of the overloads that are met in normal service thermal ageing tests were obviously necessary. The life testing procedure that was used is described. In the first testing cycle the insulation was heated to a temperature of 110°C and then was cooled with

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The Insulation of Long-Life Mining Type Electric Motors

water; in the second cycle the temperature became 130°C and water cooling was used; after the third cycle the temperature was 150°C and water cooling was used. In the fifth cycle the motor operated continuously at double rated stator current until the windings failed. During this test the stator winding temperature was 130-135°C. The motors operated continuously under these conditions for eight hours a day except that they were switched off for one hour after four hours' working; for the remainder of the day they were left immersed in water without being connected to supply. The test results on the stator windings are given in Tables 2 and Fig 1. The causes of failure were investigated. The stator winding insulated with glass cloth and varnish SK-3 had three times longer life than those insulated with glass cloth and bituminous varnish and three to five times longer life than those with the usual insulation. The combined insulation of cable paper and glass cloth impregnated with varnish SK-3 lasted 1.5 - 3 times as long as glass cloth with bituminous varnish. It is concluded that an important feature of the

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### The Insulation of Long-Life Mining Type Electric Motors

successful type of insulation is preliminary forming and polymerization of the varnish film on both glass cloth and paper insulation. A mechanically strong and water resistant varnish film greatly improves the properties of impregnated paper. It is very difficult to ensure even impregnation with varnish when the insulation is already assembled in the slots. The merits of the different types of insulation construction tried are discussed in some detail. The modified varnish SK-3 has a number of advantages over the usual varnish No 460: it adheres better to polyvinyl chloride insulation, it penetrates well and forms a solid block of insulation, and was found to be very strong in the motors that were dismantled after testing. Glass insulated with varnish 460 seems to have lower thermal conductivity than glass impregnated with modified varnish SK-3. The use of varnish SK-3 instead of 460 on conventional type insulation effects little improvement in its properties. The causes of failure of individual motors are discussed and it is concluded that it is desirable to strengthen the insulation between phases in the stator end windings, for example, by using a further layer of glass cloth. The extra size of insulation that results can be accommodated without special difficulty. As a result of the work the

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The Insulation of Long-Life Mining Type Electric Motors

following construction of insulation is recommended for hand drill motors type SER-19: glass cloth on modified varnish SK-3 should be used for slot and between-phase insulation, and the whole stator should be impregnated with modified varnish SK-3. Combined slot insulation should be used, one layer of glass cloth on varnish SK-3 and two layers of cable paper preimpregnated with varnish SK-3. Glass cloth with varnish SK-3 should be used for the end windings and the whole stator impregnated with varnish SK-3. The stator should be wound with wire with glass insulation instead of wire type PEV-2. There are 2 tables, 1 figure and 6 Soviet references.

ASSOCIATION: Kafedra dielektrikov i poluprovodnikov Kiyevskogo politekhnicheskogo instituta (Chair for Dielectrics and Semiconductors, Kiyev Polytechnical Institute)

SUBMITTED: September 29, 1958.

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SOV/143-59-1-12/17

8(6)

AUTHOR:

Borisoglebskiy, P.V., Docent, and Il'chenko, N.S.

TITLE:

Electric Strength of Compound-Treated Mica Tape Insulation and Residual (Postpuncture) Strength for Different Kinds of Voltage (Elektricheskaya prochnost' mikalentnoy kompaundirovannoy izolyatsii i ostatochnaya (posleproboynaya) prochnost' pri razlichnykh vidakh napryazheniya)

PERIODICAL:

Izvestiya vysshikh uchebnykh zavedeniy - Energetika, 1959, 2Nr 1, pp 83-88 (USSR)

ABSTRACT:

In order to explore further the problem of selection of necessary and sufficient test voltage of industrial frequency, the authors studied the decrease of the electric strength of the insulation of stator windings under the cyclic action of increased voltage of industrial frequency as well as the residual strength of insulation after puncture by surge voltage used for the puncture of the insulation by industrial-frequency voltage: 1) gradual voltage increase; 2) voltage increase by degrees of 0.5  $U_1$  ( $U_1$  - rated line voltage of the machine) at intervals

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SOV/143-59-1-11/17

Electric Strength of Compound-Treated Mica Tape Insulation and Residual (Postpuncture) Strength for Different Kinds of Voltage

of 5 to 7 minutes; 3) 4 or 5 cyclic changes of voltage (successive increases and decreases of  $0.5 U_1$  at intervals of 5 to 7 minutes), the maximum voltage of the cycle being  $4.5 U_1$ , then voltage increase by degrees of  $0.5 U_1$  at intervals of 5 to 7 minutes. Compared with the puncture voltage found by method (1), the puncture voltage obtained by method (2) was 6 to 7% lower; that obtained by method (3), 17 to 25% lower. The minimum and the average puncture voltages of the insulation at 75 to 80°C were, respectively, 35 and 25% lower than the puncture voltage of the insulation in the cold state. The experiments have shown that the action of test voltages up to  $3 U_1$  during 1 minute is absolutely safe for sound insulation and does not reduce perceptibly its electric strength. The residual strength of the insulation after its puncture by surge voltage was determined with industrial-frequency voltage and with rectified voltage. Besides, residual strength of insulation was determined with rectified voltage after its puncture with industrial-frequency

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SOV/143-59-1-1E/17  
Electric Strength of Compound-Treated Mica Tape Insulation and Residual (Postpuncture) Strength for Different Kinds of Voltage

voltage. It has been established that weakened insulation, i.e. insulation punctured by surge voltage and resulting overvoltages, can be detected by tests with alternating voltage of industrial frequency and rectified voltage equal to  $2 U_1$  and higher. There are 4 tables and 3 Soviet references.

ASSOCIATION: Moskovskiy ordena Lenina energeticheskiy institut (Moscow, Order of Lenin, Institute of Power Engineering), Kiyevskiy ordena Lenina politekhnicheskoy institut (Kiyev, Order of Lenin, Polytechnical Institute)

PRESENTED: By the Kafedra dielektrikov i poluprovodnikov KPI (Chair of Dielectrics and Transistors, KPI)

SUBMITTED: September 29, 1958

Card 3/3

BORISOGLEBSKIY, P.Y.; IL'CHENKO, N.S.

Mechanism of the breakdown of impregnated mica tape insulation by current of industrial frequency. Izv.vys.ucheb. zav.; fiz. no.5:64-71 '59. (MIRA 13:4)

1. Kiyevskiy politekhnicheskii institut.  
(Electric insulators and insulation)

SOV/144-59-8-9/14

**AUTHORS:** Borisoglebskiy, P.V., (Cand.Tech.Sci., Acting Docent) and  
Il'chenko, N.S., (Cand.Tech.Sci., Docent)

**TITLE:** An Investigation of the Ageing Processes in the  
Insulation of Electrical Machines

**PERIODICAL:** Izvestiya vysshikh uchebnykh zavedeniy,  
Elektromekhanika, 1959, Nr 8, pp 86-94 (USSR)

**ABSTRACT:** Tests were carried out at the Moscow Power Institute on the accelerated ageing of mica-folium compound insulation subjected to high voltage and fairly high temperatures. The test pieces consisted of conductors from a 6-kW synchronous motor type SM-860 750 with mica-folium insulation 2.8 mm thick, covered with cotton tape 0.2 mm thick. The windings were manufactured by the Elektrosila works. All the tests were made on sections 100 mm long. The second electrode consisted of foil attached to the surface of the insulation with a conducting lacquer. Barriers were fitted where necessary so that breakdown voltages could be measured without flashover. Power-factor measurements were made on a bridge and by ionisation current methods with an oscillograph and the usual circuit. According to the existing standards  
GOST 183-55 and PTE (1953), insulation of this class may

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SOV/144-59-8-9/14

An Investigation of the Ageing Processes in the Insulation of  
Electrical Machines

operate continuously at a temperature of 120 °C. During overload permitted by the PTE standard the temperature will rise somewhat above 120 °C. It was, therefore, of interest to study the condition of the insulation at temperatures around 120 °C. The insulation was heated by passing current through the sections from the transformer with simultaneous measurement of power factor. Iron clamps were applied to the insulation separated by distances equal to the width of the ventilation ducts in the motor. During heating the current was increased in steps and held at each step for about two hours, which corresponded to a mean temperature rise of 15 °C at each step. The successive stages of visible deterioration of the insulation as the temperature is raised are described. At a temperature of 75-80 °C the insulation swells slightly where free from the clamps, and the power factor increases more sharply. On heating to 105-110 °C there is a marked increase in power factor, the insulation swells and the emission of gas can be detected by its sharp smell. At a temperature of 120-125 °C there is intensive

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SOV/144-59-8-9/14

An Investigation of the Ageing Processes in the Insulation of Electrical Machines

evolution of gas and small drops of compound exude from the surface. At a temperature of 120-125 °C the power factor can no longer be measured at rated voltage because the galvanometer needle swings without apparent cause. However, the power factor could be measured at the reduced voltage of 1-2 kV. It will be seen from Fig 1 that there is a maximum in the power-factor curve at about 130 °C, then it falls at higher temperatures. This effect is reversible, being observed as the insulation cools down, and is apparently associated with redistribution of stress within the layers of insulation. It is concluded that if the insulation is subjected to temperatures higher than 105-110 °C it swells and voids are formed because compound is squeezed out. At temperatures above 120 °C changes take place in the condition of the insulation surface; conducting bridges are formed in which discharges occur even at rated voltage. The heating of insulation by dielectric loss was studied. On insulation that had first been heated to 70 °C the further temperature rise was 8 °C on applying three times rated voltage for one hour. The temperature

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An Investigation of the Ageing Processes in the Insulation of Electrical Machines

rise due to dielectric loss was even smaller when the insulation was initially cold. It is concluded that dielectric heating will not damage the insulation during normal factory testing. Ageing due to ionisation in gas inclusions was then considered. Tests were made in which 6 kV insulation was held under 1.5 times rated voltage for 6-6½ hours. Cycling tests were also made with up to 20 cycles of 2½ times rated voltage. These tests did not lead to swelling of the insulation and caused no significant increase in the ionisation current; the evidence is plotted in Fig 2. However, similar treatment of sections that had been heated by current to temperatures of 105-110 °C, and which had swelled in consequence, caused a considerable increase in ionisation current: but the insulation did not break down, even after 42 hours application of 2.5 times rated voltage. It will be seen from the graphs in Fig 3 that the application to undamaged insulation of 3½ times rated voltage for 22-24 hours causes an appreciable increase in ionisation current. There is also partial breakdown of the insulation to a depth of 1-4 layers of insulation.

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An Investigation of the Ageing Processes in the Insulation of Electrical Machines

Models consisting of sheets of mica with artificial air inclusions were made up to study the cause of flaking of insulation at the boundaries of ionised gas inclusions. After the models had been held for eight hours at a voltage sufficient to cause ionisation, the degree of ionisation in the models increased appreciably, as will be seen from the graph in Fig 4. It is concluded that ionisation of gas-spaces in the insulation is the cause of flaking. Similar flaking by ionised gas was also observed in insulation which had first been heated to a temperature of 80-100 °C. It is concluded that the main type of irreversible change in mica-folium compound insulation subject to ionisation of gas inclusions is flaking of the insulation at the boundaries of the inclusions. An explanation is offered for the mechanism of flaking. Reduction in the electric strength of the mica-folium compound insulation on the application of power-frequency voltage depends on the magnitude of the voltage and the time for which it is applied. Graphs of ionisation current are plotted in Fig 5, where curves 1 and 2 relate respectively to unswollen and swollen

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insulation before the application of 16-18 voltage cycles; curves 3 and 4 show the corresponding results after voltage cycling. The damage done by voltage cycling is discussed at some length. On the basis of the work recommendations are made about the power-frequency test voltage that may be applied without risk of damage to 6-kV mica-folium compound insulation. A voltage of up to three times line voltage may be applied to new insulation for one minute without danger. A voltage of twice line voltage can be applied for one minute without danger to aged insulation provided that mechanical vibrations have not damaged the mica and overvoltages have not punctured it. These are, of course, the defects which it is required to detect in

Card 6/7 precautionary or preventive testing.

There are 5 figures and 3 Soviet references.

ASSOCIATION: Kafedra tekhniki vysokikh napryazheniy, Moskovskiy energeticheskiy institut (Chair of High-Voltage Technology, Moscow Power Institute) (Eorisoglebakiy) and

80V/144-59-8-9/14

An Investigation of the Ageing Processes in the Insulation of  
Electrical Machines

Card 7/7

Kafedra dielektrikov i poluprovodnikov, Kiyevskiy  
politekhnicheskiy institut (Chair of Dielectrics and  
Semiconductors, Kiyev Polytechnical Institute)(Il'chenko)

SUBMITTED: May 22, 1959

NEKRASOV, Mikhail Makarovich, dotsent, kand. tekhn. nauk; IL'CHENKO, Nikolay  
Semenovich, dotsent, kand. tekhn. nauk; KLETCHENKOV, Ivan Ivanovich,  
aspirant.

Enamel-lacquer for conductors made from modified lacquers. Izv.  
vys. ucheb. zav.; elektromekh. 2 no.6:93-95 '59.

(MIRA 12:11)

1.Zaveduyushchiy kafedroy dielektrikov i poluprovodnikov Kiyevskogo  
politekhnikheskogo instituta (for Nekrasov). 2.Kafedra dielektrikov  
i poluprovodnikov Kiyevskogo politekhnikheskogo instituta (for  
Il'chenko). 3.Kiyevskiy politekhnikheskiy institut (for Kletchenkov).  
(Electric insulators and insulation)

SOV/110-59-9-14/22

AUTHORS: Borisoglebskiy, P.V. and Il'chenko, N.S. (Engineers)

TITLE: Reduction in the Electric Strength of the Insulation of Stator Windings of High-voltage Electrical Machines

PERIODICAL: Vestnik elektromyshlennosti, 1959, Nr 9, pp 50-52 (USSR)

ABSTRACT: This article is a contribution to discussion on the article by N.S. Skorik, Z.I. Kholopova and S.V. Tsukernik entitled 'On the electric strength of stator winding insulation of high-voltage electrical machines' published in Vestnik elektromyshlennosti, 1958, Nr 2. The data given in their article was particularly useful because the electrodes had approximately the same area as the stator slots. However, the data on the reduction of electric strength that results from one-minute application of increased voltage and multiple voltage-applications at various winding temperatures is inadequate. Additional information is required on the reduction in electric strength of 6 kV insulation. The present authors made the corresponding measurements on sections of 6 kV stator windings. Particulars are given of the insulation used. Power-frequency voltage was applied in three ways: 1) by raising the voltage gradually; 2) by raising the voltage in steps, holding at each step for 5-7 minutes;

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SOV/110-59-9-14/22

Reduction in the Electric Strength of the Insulation of Stator Windings of High-voltage Electrical Machines

3) by the application of cycles in each of which the voltage was raised and lowered again over a period of 5-7 minutes. The results of the breakdown voltage determinations by the three methods are given in Tables 1 and 2; they show how the electric strength falls as the rate of application of the voltage is increased. For example, taking as a basis the electric strength of mica-folium insulation when the voltage is steadily raised, the electric strength is reduced by 6-7% when the voltage is raised in steps held for 5-7 minutes, and the application of four or five voltage cycles of the kind described reduces the electric strength by up to 25%. This effect is attributed to partial breakdown of the insulation during the short-term application high voltage. At a temperature of 75 - 80 °C the minimum and mean breakdown strengths are 25 and 35% lower respectively than the breakdown strength of the cold insulation. This effect is attributed to reduction in the strength of the varnish and compound and to more intense ionisation of gas inclusions in the insulation. The results show

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SOV/110-59-9-14/22

Reduction in the Electric Strength of the Insulation of Stator  
Windings of High-voltage Electrical Machines

that the reduction in the electric strength of insulation  
depends very much on its physical condition and also on  
the rate of application of power-frequency voltage.  
There are 2 tables and 1 Soviet reference.

Card 3/3

8(6)

SOV/143-59-11-5/19

AUTHORS: Il'chenko, N.S., Candidate of Technical Sciences, and  
V.V. Zaika, Engineer

TITLE: On the Ionization Aging of the Insulation in High-Voltage Electric Machines

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Energetika, 1959, Nr 11, pp 42-46 (USSR)

ABSTRACT: Technicians have noticed that micatape ("mikalenta") compositive insulation of the stator windings in high-voltage machines, with bitumen-oil lacquer as a binder, only weakly resists the ungluing influence of ionizing inclusions inside the insulation layers and shows a comparatively high rate of insulation damages caused by discharges. The authors have carried out experiments on models to establish which kind of insulation should be preferred, namely, whether the standard-type insulation made of micatape and bitumen-oil lacquer or a newer type using glass-micatape ✓

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SOV/143-59-11-5/19

On the Ionization Aging of the Insulation in High-Voltage Electric Machines

and the "EF-5" <sup>15</sup>silico-organic lacquer<sup>15</sup>. The "EO-6M" oscillograph was used in the experiments. Ionization aging was produced by power frequency led through the models for 23 to 25 hours. The authors conclude: 1) The silico-organic binding lacquer, used in the manufacture of glass-micatape insulation for electric machines, better resists the ionization aging than the insulation with bitumen-oil lacquer. 2) Ionization (and other) tests of insulation in high-voltage machines should be more widely done both in the production plants and in prophylactic tests in power networks. There are 1 set of diagrams, 2 graphs, and 6 Soviet references. ✓

ASSOCIATION: Kiyevskiy ordena Lenina politekhnicheskii institut  
Card 2/3

SOV/143-59-11-5/19  
On the Ionization Aging of the Insulation in High-Voltage Electric  
Machines

(Kiyev "Order of Lenin" Polytechnic Institute)

SUBMITTED: April 17, 1959

Card 3/3

8(2)

SOV/143-60-1-3/21

AUTHOR: Il'chenko, N.S., Candidate of Technical Sciences

TITLE: Ionization Tests of Insulation in High-Voltage Electric Machines

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy: Energetika, 1960, Nr 1, pp 19 - 24 (USSR)

ABSTRACT: This is an account of the results of tests carried out on new 6 kv insulation sections produced by the zavod "Elektrosila" ("Elektrosila" plant). They contain mica-band insulation 2.8 mm thick and are covered with cotton ribbon 0.2 mm thick. Each section was 100 mm long. The second electrode consisted of foil stuck to the insulation surface with conducting varnish of 50-100 ohm resistance. Ionization tests are said to have disclosed faults in the mica-band compound insulation of high-voltage machines in cases where other types of test did not. There are 2 main ionization tests in use: ionization curves, showing the relation-

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SOV/143-60-1-3/21

## Ionization Tests of Insulation in High-Voltage Electric Machines

ship of  $tg\delta$  to voltage; and the measurement of ionization intensity in gas occlusions in the insulation with the aid of UChR (Ukazatel' chastichnykh razryadov - indicator of partial discharges). To age the insulation by heat a thermostat and electric current were used. The grooved part of the sections was simulated by compressed wood, which was also applied along the wide edges of the straight part. The front part was simulated by uncovered sections whose insulation swelled when heated by current to 105-110°C. Figure 1 shows the results of tests during which the insulation was aged by heat. The curves show that, by keeping the insulation at 150°C for 40 hours, ionization currents increased by 2 - 2.3 times. It was found that swollen insulation aged more quickly than non-swollen insulation. The insulation was also tested for aging by vibration, work on which had already been carried out by N.A. Kozyrev [Ref 3\_7, who

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SOV/143-60-1-3/21

### Ionization Tests of Insulation in High-Voltage Electric Machines

found that the fall in the strength of new 6 kv insulation was noticeable after 250,000 vibrations (vibration range 8.5 and 17 mm, sweep of the free part of the rod from the pressing point 600 and 300 mm). A fall in the electrical strength of insulation which had been in use for 26,000 hours, was felt after 50,000 vibrations, and of insulation artificially aged by heat - ~~from~~ 50,000 to 150,000 vibrations. The present tests were carried out on a special apparatus with a vibration range of 4 mm. Figure 3 shows that after 250,000 vibrations the ionization currents in the insulation increased sharply (up to 6 times at nominal voltage). If an EO-6M electronic oscillograph is used to determine ionization intensity, higher sensitivity will be attained. The author concludes that aging caused by ionization, temperature and mechanical forces is accompanied by peeling of the insulation, and the formation of gas channels and occlusions. ✓

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SOV/143-60-1-3/21

Ionization Tests of Insulation in High-Voltage Electric Machines

There is also a sharp increase in ionization currents in the insulation. Ionization testing methods are recommended as being efficient. There are 3 graphs and 14 Soviet references. ✓

ASSOCIATION: Kiyevskiy ordena Lenina politekhnicheskii institut  
(Kiyev Order of Lenin Polytechnical Institute)

SUBMITTED: July 16, 1959, by the Kafedra dielektrikov i poluprovodnikov (Chair of Dielectrics and Semiconductors)

Card 4/4

NEKRASOV, M.M., kand. tekhn. nauk, dotsent; IL'CHENKO, N.S., kand. tekhn. nauk, dotsent; IYERUSALIMOV, M.Ye., kand. tekhn. nauk, dotsent

Review of [kand. tekhn. nauk, dotsent] N.A. Kozyrev's book  
"Insulation of electrical machines and methods for testing  
it." Izv. vys. ucheb. zav.; energ. 6 no.11:110-112 N'63.

(MIRA 17:2)

1. Kiyevskiy politekhnicheskii institut.

L 46165-66 EWT(m)/EWP(1)/T IJP(c) GG/RM

ACC NR: AP6021932

SOURCE CODE: UR/0143/66/000/003/0020/0026

AUTHOR: Il'chenko, N. S. (Candidate of technical sciences, Docent);  
Gavrilyuk, G. I. (Engineer); Kovalev, A. V. (Engineer) 38

ORG: Lenin Polytechnic Institute, Kiev (Kiyevskiy ordena Lenina  
politekhnikheskiy institut B

TITLE: Effect of ionization intensity <sup>19</sup> on the service life of  
polyethylene <sup>5</sup> (film)

SOURCE: IVUZ. Enegetika, no. 3, 1966, 20-26

TOPIC TAGS: ionization phenomenon, polyethylene plastic dielectric  
property

ABSTRACT: The article investigates the stability of a dielectric to the action of ionization of different intensities with an almost identical intensity of the electric field applied to the dielectric. <sup>5</sup> The experiments were carried out over the same aging period for all samples. The sample consisted of three layers of polyethylene with artificial internal inclusions of air. For the upper and lower layer of the sample, the polyethylene used had a thickness of 45 microns, and for the middle layer a thickness of 65, 170, 500, 750, and 1000 microns. A cylindrical opening with a diameter of 10 or 20 mm was made in the middle layer.

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UDC: 621.315.616.9:537.572

L 46165-66

ACC NR: AP6021932

Then, the upper and lower polyethylene films of the sample were subjected to an ionization process taking place in the inner opening, on the same area for all samples, determined by the diameter of the cylindrical opening in the middle layer. The volume of the artificial air inclusion was varied by changing the height of the cylinder. Detailed experimental results are shown in graphic and tabular form. Analysis of the results shows that ionization processes taking place in inner gas inclusions in a solid dielectric are one of the main factors determining its service life. The service life of polyethylene films decreases with an increase in the intensity of the ionization in the gas inclusions, but no direct proportionality was observed. Orig. art. has: 5 figures and 1 table.

SUB CODE: 11/ SUBM DATE: 02Nov64/ ORIG REF: 010/ OTH REF: 005

Card 2/2

IL'CHENKO, O. T.: Master Tech Sci (diss) -- "Investigatbn of the thermal resistance of the contact layer and the back connections of turbine blades". Khar'kov, 1958. 15 pp (Min Higher Educ Ukr SSR, Khar'kov Polytech Inst im V. I. Lenin), 150 copies (KL, No 4, 1959, 126)

SOV/143-589-13/18

AUTHOR: Kapinos, V.M., Candidate of Technical Sciences;  
Il'chenko, O.T., Engineer

TITLE: Heat Conductivity of a Layer, Formed Through Projections  
of Surface Roughness (Teplovaya provodimost' sloya,  
obrazovannogo vystupami sherokhovatosti)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy - Energetika,  
1958, Nr 9, pp 77-89 (USSR)

ABSTRACT: When two rough surfaces are placed together, there is  
direct contact only between individual projections of  
the surface roughness. Consequently, the actual  
contact surface is always essentially smaller than  
nominal one (of the order  $10^{-2}$  -  $10^{-5}$  of the nominal  
one). As a result of the incomplete contact, the  
thermal conductivity of the metallic contact is  
commensurate with the conductivity of the gas inter-  
layer. The total conductivity of a layer formed by the  
roughness projections and filled by a gaseous medium,  
can be computed on the basis of the assumptions and

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SOV/143-58-9-13/18

Heat Conductivity of a Layer, Formed Through Projections of Surface Roughness

solutions examined in this paper. The author also works out formulae for computing the heat conductivity of a simple contact layer of steam from homologous materials, as well as a formula for determining the contact resistance of various materials. The paper examines the effect on thermal conductivity of roughness, specific compression pressure, the physical properties of materials and the temperature of the contact layer. Each pair of objects was studied at 2-3 temperature values of the contact layer with loads of 40-500 kg/cm<sup>2</sup> (and in special tests up to 1200 kg/cm<sup>2</sup>). In accordance with the accepted method, only one parameter was varied in a test series - specific compression pressure - the average temperature of the contact layer remaining constant. The comparative data resulting from computed and empirical determination of the contact resistance of the mixed pairs confirm the accuracy of the computational formula. Computational errors for the 5 mixed pairs studied did not exceed 10%. Calculation

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SOV/143-58-9-13/18

Heat Conductivity of a Layer, Formed Through Projections of Surface Roughness

according to the formulae indicated gives the minimum thermal resistance of the contact layer, which is conditioned by the micro-roughness. The presence of a macro-unevenness can cause considerable increase in the contact resistance. There are 18 graphs, 1 sectional diagram, 1 table and 10 references, 8 of which are Soviet, 1 English and 1 American.

ASSOCIATION: Kafedra turbostroyeniya Khar'kovskogo politekhnicheskogo instituta imeni V.I.Lenina (Chair of Turbine Construction, Khar'kov Polytechnical Institute imeni V.I.Lenin)

SUBMITTED: May 12, 1958

Card 3/3

IL'CHENKO, O.T., Insh.

Determining the effective contact area of two plane bodies.  
Vest.mash. 38 no.10:60-64 0 '58. (MIRA 11:11)  
(Surfaces (Technology))--Measurement)

IL'CHENKO, O.T., KAPINOS, V.M.

Thermal resistance of a contact layer. Trudy KhPI. Ser. ~~msgb.~~ 19  
no.5:169-181 '59. (MIRA 14:9)  
(Heat--Radiation and absorption)

S/123/60/000/014/005/005  
A004/A001

Translation from: Referativnyy zhurnal, Mashinostroyeniye, 1960, No. 14, p. 290,  
# 74731

AUTHORS: Kapinos, V. I., Il'chenko, O. T.

TITLE: On the Problem of Determining the Thermal Contact Resistance of  
Mixed Pairs <sup>76</sup>

PERIODICAL: Tr. Khar'kovskogo politekhn. in-ta, 1959, Vol. 19, pp. 217-223

TEXT: The authors investigate the thermal resistance of contact surfaces of mates of different materials. Since the thermal resistance of the contact layer of the most widespread classes of surface finish (average height of micro-roughness =  $2 - 15 \mu$ ) is equivalent to that of a metal layer with a thickness between 1 and 15 mm, considerable temperature gradients arise only during great heat flows which pass the contact layer, e. g. in artificially cooled units of steam and gas turbines. The thermal resistance of specimen pairs of the following materials were investigated on a special test installation: ЭЖ-1 (EZh-1) - 9Э1-1 (EYal-T); EZh-1 - СТ. (St)45; St.45 - EYal-T; St.45 - A16-T (D16-T);

Card 1/2

S/123/60/000/014/005/005  
A004/A001

On the Problem of Determining the Thermal Contact Resistance of Mixed Pairs

3469 (EI69) - St.45 with a micro-roughness in the range of  $2.5 - 10 \mu$ . The tests were carried out at different compressive stresses and temperatures. The authors present a calculation formula for the determination of the thermal resistance of the contact surfaces according to the micro-geometry data of each component, thermophysical characteristics of the materials and magnitude of specific pressure. The formula includes also some factors obtained from processed test data. The calculation errors by this formula amount on the average to 4 - 6% in comparison with experimental points for plane surfaces without micro-roughness, e. g. ground on the plate. For milled surfaces, the formula gives an understated value of the contact layer thermal resistance. ✓

N. E. R.

Translator's note: This is the full translation of the original Russian abstract.

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S/587/60/029/002/006/008  
D203/D302

26.2/20

AUTHORS: Kapinos, V. M. and Il'chenko, O. T.

TITLE: Calculating thermal resistance of blade root joints

SOURCE: Khar'kov. Politekhnicheskii institut. Trudy. v. 29,  
no. 2, 1960. Parovyye i gazovyy turbiny, 163-168

TEXT: The authors give a method for the above based on the solution of contact problem conductivity. The method also enables one to determine the temperature distribution in the root joint. The solution is obtained first for a simple swallow tail root. Calculated and experimental values of thermal resistance of three different types of root joints are then compared and the agreement is found to be good. Measured and calculated temperature distributions of the contacting surfaces do not coincide. The divergence is supposed to be due to the inaccuracy of the determination of the thermal conductivity coefficient which depends, in particular, on compression pressure. A fir-tree root can be calculated by applying the solutions of former equations to each contact segment separate- ✓

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Calculating thermal resistance ...

S/587/60/029/002/006/008  
D203/D302

ly and equating temperatures and heat flows at the junctions. However, it is much simpler to use the same solution as for the swallow-tail root and a mean coefficient of heat transfer. The temperature field was obtained by electro-thermal analogy. A graph gives calculated and measured temperatures. There are 4 figures, 1 table and 6 references: 5 Soviet-bloc and 1 non-Soviet-bloc. ✓c

Card 2/2

S/096/61/000/012/003/003  
E194/E155

AUTHOR: Il'chenko, O.T., Candidate of Technical Sciences  
TITLE: An experimental study of a model of a cooled bolted joint

PERIODICAL: Teploenergetika, no.12, 1961, 60-63.

TEXT: After 10 000 hours' operation turbine studs should be at a stress of 17-20 kg/mm<sup>2</sup> and as the flange is at a temperature of 550-570 °C either austenitic steel must be used or the stud must be cooled. Cooling of pearlitic studs increases the thermal stresses and as the combined thermal and initial tensile stress should not exceed 45 kg/mm<sup>2</sup> the flanged joints may leak if repeated cold starts are made. The thermal stresses may be relieved by the use of compensating sleeves which are of low coefficient of expansion, and the best results are obtained when the sleeves are also cooled. Experimental study of the effectiveness of cooling pearlitic studs is of practical importance and accordingly the present article describes the results of an experimental investigation made on a model, without going very deeply into the accuracy of measurement of the temperature

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An experimental study of a model of .. S/096/61/000/012/003/003  
E194/E155

distribution. A full-scale model was made and is illustrated diagrammatically in Fig.3, in which the following notation is used. 1 - main thermocouples; 2 - thermocouple for measuring inlet air temperature; 3 - screen; 4 - stud; 5 - sleeve; 6 - thermocouple for measuring air discharge temperature; 7 - nut; 8 - electric heater. The cooling medium used was air, which had previously been heated to the required temperature. The air passed through the gap between the screen and the outer surface of the stud and the stud temperature was measured along the bore. Many thermocouples were also installed in the flanges to plot the temperature distribution. Tests were made with various rates of air flow at various initial temperatures. Quite a small flow of air had a substantial cooling effect. Thus, with a flange temperature of 85 °C and a cooling-air flow rate of 79 kg/hour at an initial temperature of 45 °C, the whole length of the stud was cooled to a temperature of 58 °C. In another test, with a flange temperature of 216 °C at a flow rate of 58.2 kg/hour and an initial air temperature of 132 °C, the stud was cooled to a temperature of 175 °C. The screening greatly improved the effectiveness of the cooling by directing the main heat flow from the stud to the cooling medium and minimising heat

Card 2/ 3

An experimental study of a model of ... S/096/61/000/012/003/003  
E194/E155

exchange between the flange and the cooling medium. Graphs of the temperature distribution in the parts of the cooled joint are plotted in Fig.6 in which the notation is as follows: 1 - nut; 2 - stud; 3 - sleeve, with a mean flange temperature of 210 °C and a flow of cooling air of 84 kg/hour whose inlet and outlet temperatures were 133 and 163.5 °C. It will be seen that the greatest temperature gradient in the cooled bolt section and, therefore, the greatest rate of heat transfer to the cooling medium, is observed in the compensating sleeve in the zone of the radial drillings. It is concluded that no creep concentration need be expected in the hot parts of the bolted joints. The experiments confirm that cooling by air (and still more by steam) can be effective with relatively small flows, which is particularly important as only under such conditions can bolt cooling be justified. There are 6 figures and 2 references: 1 Soviet-bloc and the following English language reference:  
Ref.2: E.I. Robinson, "Steam-piping design to minimize creep concentration". Trans.ASME Vol.77, No.7, 1955.  
ASSOCIATION: Khar'kovskiy politekhnicheskii institut  
(Khar'kov Polytechnical Institute)  
Card 3/0 3

IL'CHENKO, O.T., kand.tekhn.nauk

Calculating stress relaxation in the cooled pin of a flanged  
joint. Vest.mash. 42 no.3:25-29 Mr '62. (MIRA 15:3)  
(Flanges—Cooling)

L 19497-63 EPR/EPF(c)/EWT(1)/EPF(n)-2/BDS AFPTC/ASD/IJP(C)/  
SSP Ps-4/Pr-4/Pu-4 HW  
ACCESSION NR: AP3003163 S/0096/63/000/007/0026/0031

AUTHORS: Il'chenko, O. T. (Candidate of technical sciences) 27 B

TITLE: Selection of cooling systems for disk rotors in gas turbines 26

SOURCE: Teploenergetika, no. 7, 1963, 26-31

TOPIC TAGS: heat transfer, disk rotor, gas turbine, thermal stress

ABSTRACT: Three basic cooling systems for a disk rotor in a gas turbine installation are discussed: 1) cooling by radial blowing on the horizontal surface of the disk; 2) cooling by scavenging through disk assembly clearances (rear joint); and 3) direct jet stream cooling. Temperature distributions, cooling rate intensities, and induced thermal stresses are analyzed for different values of heat transfer coefficients in a conical disk for all three methods of cooling. The jet stream method is shown to create very large temperature gradients through the disk to a cause plastic deformations. A combination of radial blowing and scavenging through clearances, however, is shown to produce a minimum of thermal stress through the disk under steady state heat transfer conditions.

Card 1/2

L 19497-63

ACCESSION NR: AP3003163

This is shown to be true also for unsteady situations encountered in fast turbine starts. Orig. art. has: 7 figures and 2 tables.

ASSOCIATION: Khar'kovskiy politekhnicheskii institut (Kharkov Polytechnic Institute)

SUBMITTED: 00

DATE ACQ: 23Jul63

ENCL: 00

SUB CODE: AI

NO REF SOV: 007

OTHER: 000

Card 2/2

IL'CHENKO, O.T., kand. tekhn. nauk

Use of an additional (MSM-1) network unit in the USM-1 analog  
computer for solving nonstationary heat transmission problems.  
Teploenergetika 12 no.3:62-65 Mr '65. (MIRA 18:6)

1. Khar'kovskiy politekhnicheskii institut.

LUKHTAN, I.V.; SMOLYANSKAYA, L.M. [Smoligns'ka, L.M.]; IL'CHENKO, P.F.;  
SHUSTER, S.I.; SHATAIKIN, S.P.; BOKSERMAN, Ye.I. [Bokserman, YE.I.];  
CHIZHMAKOVA, V.P. [Chyzhmakova, V.P.]

Use of ammonia soap for the fat-liquoring of stiff leather. Leh.  
prom. no.2:59 Ap-Je'64 (MIRA 17:7)

IL'CHENKO, P. A.

USSR/Physics - Metal films

FD-1018

Card 1/1 : Pub. 153 - 22/24

Author : Il'chenko, P. A.

Title : Obtaining of free metallic films (without the underlying base)

Periodical : Zhur. tekhn. fiz., 24(1136-1138, Jun 1954

Abstract : Remarks that procedures for obtaining extremely thin metallic films by way of evaporation in vacuo are presently well developed, but that the difficult problem is to separate such films from their underlying base and to obtain them in free form, especially if films of considerable size and without tears are needed. Discusses methods for obtaining such free films, 0.02-0.1 microns thick, transparent to light. Thanks Acad. A. A. Lebedev. References all non-UBSR.

Institution : -

Submitted : August 1, 1953

S/191/60/000/002/001/012  
B027/B058

AUTHORS: Arkhipova, Z. V., Semenova, A. S., Sirota, A. G.,  
Gol'denberg, A. L., Il'chenko, E. A.

TITLE: Copolymerization of Ethylene With Propylene

PERIODICAL: Plasticheskiye massy, 1960, No. 2, pp. 4-8

TEXT: The authors deal with the copolymerization of ethylene with propylene, since polymerization of ethylene with chromium oxide catalysts on an aluminum silicate carrier results in a material of too low elasticity. The change of the polyethylene properties by increasing the ramification and reducing the degree of crystallinity by means of copolymerization of ethylene with other monomers is therefore of interest. The methods elaborated for the production of polyethylene (Ref. 1) were applied for the synthesis of ethylene copolymers with propylene. A carrier with 4%  $Al_2O_3$  and 96%  $SiO_2$  saturated with a 0.3 mole aqueous chromium anhydride solution was used as catalyst. The activation took place at 550°C, air velocity 200 l per 1 l catalyst during 5 hrs. A 1.5 l autoclave with a stirring

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Propylene

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apparatus and steam jacket was used for the copolymerization. The degree of ramification of the copolymers was determined by infrared absorption spectra, the degree of crystallinity was calculated according to X-ray diffraction curves. The copolymerization of ethylene with propylene proceeds less readily than the polymerization of ethylene; the reaction is strongly accelerated if the pressure is increased within the range of from 8 to 30 atm. The temperature is a very important factor in the preparation of polymers with certain properties. A temperature increase reduces the viscosity, tensile strength, and breaking elongation. An increase of the propylene content in the initial mixture of the monomers leads to increased ramification of the copolymers and a reduction of the crystallinity degree. It follows from the dependence determined that the properties of new polymers can be altered toward the required direction by altering the composition of the initial mixture of the monomers and the conditions of the copolymerization process. Thanks are expressed to Professor V. M. Chulanovskiy and the scientific collaborators I. N. Andreyeva and V. M. Zapletnyak for advice rendered, to B. A. Lipkind for producing the aluminum silicate samples and to A. M. Val'berg, A. A. Stepanova, and G. S. Rubinson for experimental work.

38063

S/191/62/000/006/003/016  
B110/B138

15.2061.

AUTHORS: Gol'denberg, A. L., Il'chenko, P. A., Sirota, A. G.,  
Ryabikov, Ye. P., Kulikovskaya, L. F.

TITLE: Investigation of the structure of ethylene-propylene  
copolymers

PERIODICAL: Plasticheskiye massy, no. 6, 1962, 8-11

TEXT: The paper reports research into the relationship between the branching of propylene-ethylene copolymers (30-40 at) and crystallinity, which determines physicomechanical properties. The copolymer contained up to 50%  $C_3H_6$ . Its branching was examined using samples 0.020 mm thick and an MKC-11 (IKS-11) spectrometer with an NaCl prism. The number of  $CH_3$  groups per 100 carbon atoms was found from the intensity ratio of the 1378 and 1465  $cm^{-1}$  absorption bands. The degree of crystallinity was determined from X-ray diffraction curves obtained with an YPC-50 (URS-50) apparatus. It was found that the degree of crystallinity increased almost linearly with decreasing number of  $CH_3$  groups. The crystallinity and

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Investigation of the structure ...

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B110/3138

density of copolymers containing 2-3.3  $\text{CH}_3$  groups are substantially higher than for high-density polyethylene (copolymer 80-87%, high-density polyethylene 50-70% crystallinity), as branching of ethyl and butyl is present in the latter. For less than 2  $\text{CH}_3$  groups the X-ray pictures of copolymers and polyethylene differ only in crystallinity. For 4-5  $\text{CH}_3$  groups the crystallinity falls and the diffraction pattern is shifted toward larger interplane distances. Examination under an electron microscope revealed greater formations of spherulites in polyethylene than in the copolymer. Crystallinity and density thus decrease as the number of propylene links in the macromolecular increase. It was established by examining the crystallinity by infrared absorption spectra that the  $730\text{ cm}^{-1}$  absorption band increased almost linearly with crystallinity while the  $1302\text{ cm}^{-1}$  band decreased non-linearly. There are 8 figures.

Card 2/2

ZENAIROKAYA, N.N.; LIKHENKO, P.A.; MARTYNOV, M.A.; SHUYENINOVA, N.V.

Effect of warming on the structure and properties of nonplasticized  
films of cellulose triacetate. Plast.massy no.6167-68 '64.  
(MIRA 28:4)

SEMENOVA, A.S.; PARAMONKOV, Ye.Ya.; FEDOTOV, B.G.; GOL'DENBERG,  
A.L.; IL'CHENKO, P.A.; CHAPLINA, A.M.; SKURIKHINA, V.S.;  
SAZHIN, B.I.; MATVEYEVA, Ye.N.; KOZOLA, A.A.; DYN'KINA,  
G.M.; SIROTA, A.G.; RYBIKOV, Ye.P.; GERBILSKIY, I.S.;  
SHCHUTSKIY, S.V., red.; SHUR, Ye.I., red.

[Medium pressure polyethylene] Polietilen srednego davlenia.  
Moskva, Khimdia, 1965. 89 p. (MIRA 18:7)

1. Nauchno-issledovatel'skiy institut polimerizatsionnykh  
plastmass (for all except Shchutskiy, Shur).

SIROTA, A.G.; RYABIKOV, Ye.P.; GOL'DENBERG, A.L.; IL'CHENKO, P.A.;  
CHOPKO, L.F.

Modification of the structure and properties of polyolefins.  
Ethylene copolymers with higher  $\alpha$ -olefins. Plast. massy  
no.11:5-8 '65. (MIRA 18:12)

L 8508-<sup>(A)</sup> EWT(m)/EWT(j)/T RPL WW/WE/RM

ACC EWT AP5028491

SOURCE CODE: UR/0286/65/000/020/0066/0066

AUTHORS: Sirota, A. G.; Ryabikov, Ye. P.; Chopko, L. P.; Lavrovskiy, K. P.;  
Brotskiy, A. M.; Rumyantsev, A. N.; ~~Mukhomorov, A. A.~~; Gol'denberg, A. L.

ORG: none

TITLE: A method for obtaining ethylene copolymers. Glass 39, No. 175638

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 20, 1965, 66

TOPIC TAGS: polymer, copolymer, ethylene, olefin, chromium compound, catalyst, copolymerization, paraffin, cracking, petroleum

ABSTRACT: This Author Certificate presents a method for obtaining ethylene copolymers by copolymerizing ethylene with an  $\alpha$ -olefin-containing compound at 60-130C and at a pressure of 30-40 atm in the presence of acid chromium catalyst. To simplify the technique of copolymerization, benzene distillate of rapid contact cracking of petroleum paraffins is used as the  $\alpha$ -olefin-containing compounds.

SUB CODE: 07/ SUBM DATE: 077-663

RUM  
Card 1/1

UDC: 678.742.2-199

L 20371-66 EWT(m)/EWP(j)/T/ETC(m)-6 WW/RM

ACC NR: AP6006535

(A)

SOURCE CODE: UR/0191/65/000/011/0005/0008

AUTHORS: Sirota, A. G.; Ryabikov, Ye. P.; Gol'denberg, A. L.; Il'chenko, P. A.; Chopko, L. F.

ORG: none

TITLE: Modification of the structure and properties of polyolefins. Copolymers of ethylene with higher  $\alpha$ -olefins

SOURCE: Plasticheskiye massy, no. 11, 1965, 5-8

TOPIC TAGS: polymer, crystalline polymer, conjugated polymer, catalytic polymerization, catalyst, organic synthetic process, copolymer, ethylene, olefin, polymer structure

ABSTRACT: The synthesis of ethylene-higher  $\alpha$ -olefin copolymers in the presence of an oxychromic catalyst was studied. The catalyst was prepared after Z. V. Arkhipova, A. S. Semenova, A. G. Sirota, A. L. Gol'denberg, and P. A. Il'chenko (Plast. massy, No. 2, 4, 1960), and the higher  $\alpha$ -olefins were synthesized after A. L. Gol'denberg and S. O. Lyubetskiy (Vysokomolek. soyed., 5, No. 6, 905, 1963). The reaction was carried out in an autoclave at a temperature of 80--100C. The degree of crystallinity, modulus of elasticity, density, viscosity in decaline at

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UDC: 678.74-13.01:539.2

L 20371-60

ACO NR: AP6006535

1350, melting point, and the number of  $\text{CH}_3$  groups per 1000 atoms of C of the synthesized polymers were determined. The experimental results are presented in graphs and tables (see Fig. 1). The degree of crystallinity and the extent of

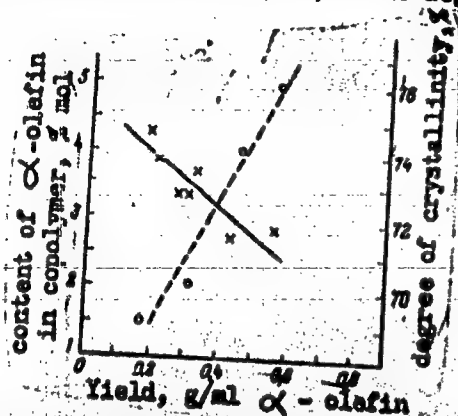


Fig. 1. Composition (—) and degree of crystallinity (---) of ethylene- $\alpha$ -heptene copolymer as a function of the reaction yield.

branching were determined by x-ray and IR spectra respectively. It was found that the ethylene-higher  $\alpha$ -olefins have properties intermediate between those of medium and high pressure polyethylene. B. I. Vol and M. V. Sarana participated in

Card 2/3

L 20371-66

ACC NR: AP6006535

the experimental work. Thanks are given to B. A. Krentsel', K. P. Lavrovskiy,  
A. M. Brodskiy, and A. N. Rumyantsev for their valuable advice. Orig. art. has:  
2 tables and 5 graphs. 4

SUB CODE: 0711/

SUBM DATE: none/

ORIG REF: 009/

OTH REF: 009

Card 3/3 vmb

47009-66 EWT(m)/EWP(j)/T IJP(o) WW/RM

ACC NR: AP6027284 (A)

SOURCE CODE: UR/0191/66/000/008/0058/0060

AUTHOR: Sirota, A. G.; Gol'denberg, A. L.; Il'chenko, P. A.; Ryabikov, Ye. P.; Fedotov, B. G.; Karaseva, M. G.; Zyuzina, L. I.; Kharitonova, O. K.

ORG: none

TITLE: Modification of the structure and properties of polyolefins. Effect of radiation on ethylene-propylene copolymers

SOURCE: Plasticheskiye massy, no. 8, 1966, 58-60

TOPIC TAGS: irradiation effect, electron radiation, copolymer, ethylene, propylene, radiation chemistry

ABSTRACT: The effect of irradiation with fast electrons (2.0-2.2 MeV) on the structure and properties of ethylene-propylene copolymers (EPC) was studied on films of these copolymers (50  $\mu$  thick) containing 7 mole % propylene (EPC-7) and stabilized with the heat and light stabilizers P-24 phosphite and 2-hydroxy-4-alkoxybenzophenone. The irradiation effect was determined from the solubility of the films, given by the content of the soluble sol fraction extracted with boiling o-xylene. The cross-linking produced by the electrons decreases the crystallinity of the copolymer: the degree of crystallinity, determined by x-ray diffraction, decreased with increasing irradiation dose, but there was no appreciable change in the fusion temperature. A study of the change in physicochemical characteristics showed the specific elongation at rupture to decrease (particularly at 50 Mrad) and the ultimate tensile strength to fall off

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UDC: 678.742.2-134.23.019.3:539.124

L 47009-65

ACC NR: AP6027284

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slightly with increasing dose. The most significant change occurs above the melting range of the film: at 135°C, the initial film has no strength of extension at all, whereas the irradiated film has a strength of extension of about 10 kg/cm<sup>2</sup>. The degree of unsaturation of the copolymer increases substantially with increasing dose up to 100 Mrad, and approaches a constant value with further increase in dose. The main type of unsaturation are the trans-vinylene groups ( $R-HC=CH-R'$ ). The irradiated copolymer samples oxidize rapidly in air, and IR spectra show an increase in the concentration of carbonyl groups. In conclusion, authors thank A. V. Iysov, S. A. Subbotkin, A. S. Andreyev and A. M. Khomyakov for their assistance in the irradiation of the samples. Orig. art. has: 5 figures.

SUB CODE: 07,18/ORIG REF: 003/ OTH REF: 005

Card 2/2 vmb

YEVLANOV, O.V., inzh.; IL'CHENKO, P.P., elektromonter

Device for checking voltage indicators. Energetik 10 no.5:25-  
26 My '62. (MIRA 15:5)  
(Electric power distribution—Equipment and supplies)

KHARLAMPOVICH, G.D.; RUS'YANOVA, N.D.; MEL'NIKOVA, V.I.; GORDEYEVA, Z.K.;  
Prinimali uchastiye: MIRONOV, V.I., laborant; MAKAROVA, Z.A.,  
laborant; KUDRYASHOVA, R.I., student; TATARUOV, G.P., student;  
SELITSKIY, G.A., student; IL'CHENKO, P.P., student; MOSKOVSKIKH, V.V.,  
student; YEVSEYEV, Ye.I., student

Studying the new method of ammonia recovery in an experimental  
industrial installation. Koks i khim. no.2:34-38 '62.  
(MIRA 15:3)

1. Ural'skiy politekhnicheskii institut.  
(Coke-Oven gas) (Ammonia)

IL'CHENKO, P. Ya.

Deceased  
o. '60

1963/  
3

Surgery

POTEMKIN, K.N.; GREENEV, S.K. Prinimali uchastiye: KIRSANOV, A.K.;  
BACHEVER, R.V.; IL'CHENKO, R.L.; POLESHKO, Ye.S.; KISTINA, A.I.

Quantitative determination of magnetite by a gravimetric  
magnetic method. Zhur. prikl. khim. 36 no.5: 981-988 My '63.  
(MIRA 16:8)

(Magnetite) (Magetochemistry)

IL'CHENKO, S.G.

GOLOVKIN, Nikolay Alekseyevich, doktor tekhnicheskikh nauk, professor;  
CHIZHOV, Georgiy Borisovich, professor, doktor tekhnicheskikh  
nauk; SHKOL'NIKOVA, Yelizaveta Fedorovna, kandidat tekhnicheskikh  
nauk; SHCHUKOTOV, P.A., redaktor; MARKH, A.T., professor, retsenzent;  
KHMTAGUROVA, F.V., professor, retsenzent; KHRISTODULO, D.A., professor,  
retsenzent; BABIN, F.P., dotsent, retsenzent; IL'CHENKO, S.G., dotsent,  
retsenzent; CHOGOVADZE, Sh.K., dotsent, retsenzent; KOSLOV, G.I.,  
tekhnicheskiiy redaktor

[Technology of refrigerating food products] Kholodil'naya tekhnologia  
pishchevykh produktov. Moskva, Gos.izd-vo tor-govoi lit-ry, 1955. 375 p.  
(MIRA 9:3)  
(Food--Preservation) (Refrigeration and refrigerating machinery)